**west virginia** department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475 • FAX: (304) 926-0479

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

# ENGINEERING EVALUATION / FACT SHEET

## BACKGROUND INFORMATION

| | |
|---|---|
| Application No.: | R13-2562D |
| Plant ID No.: | 069-00084 |
| Applicant: | Tekni-Plex, Inc. dba Tri-Seal |
| Facility Name: | Packing Converting Facility |
| Location: | Triadelphia, Ohio County, WV |
| NAICS Code: | 322222 – Coated and Laminated Paper Manufacturing |
| Application Type: | Modification |
| Received Date: | September 18, 2017; resubmitted Feburary 9, 2018 |
| Engineer Assigned: | John Legg |
| Fee Amount: | $1,000.00 |
| Date Received: | September 19, 2017 |
| Complete Date: | February 9, 2018 |
| Due Date: | May 9, 2018 |
| Applicant Ad Date: | September 22, 2017 |
| Newspaper: | *Wheeling News Register* |
| UTM's: | Easting: 537.13 Northing: 4,434.9 Zone: 17 |
| Description: | Addition of a printer (P1S;P1E) along with increases in permit limits for existing permitted equipment. |

## SUMMARY

This modification permit documents the (after-the-fact) addition of a printer (P1S; P1E). Also, it documents for the first time equipment-cleaning emissions for Laminators 3 and 5 estimated by the company to equal 2.10 tons per year (tpy) of VOC/HAP (DEG monobutyl ether).

By incorporating the changes proposed in this modification, the writer estimates that the emissions from the facility will increase by the amounts shown in Table 1 below.

**Table 1: Estimated (by DAQ Writer) Emission Increases in Going from R13-2562C to R13-2562D.**

| Air Pollutant | Before (1) R13-2562C | After R13-2562D | Delta (R13-2562D - R13-2562C) |
|---|---|---|---|
| VOC | 5.08 | 11.43 (2) | +6.35 |
| NOx | 0.09 | 0.36 (3) | +0.27 |
| CO | 0.06 | 0.30 (3) | +0.24 |
| PM | 0.01 | 0.027 (3) | +0.02 |

(1) Data from permit R13-2562C for Laminator 3. VOC Cleaning emissions from Laminator 3 and Laminator 5 were not included in permit R13-2562C.

(2) VOC emissions after this modification are estimated by Tri-seal to be:

11.43 tpy = 10.01 tpy from Laminator 3 + 1.05 tpy from cleaning Laminator 5 + 0.37 tpy from new Printer 1

Where:

VOC Emissions from Laminator 3 = 8.79 (coating) + 0.020 (oven) + 1.20 (cleaning) = 10.01 ton/yr

(3) Natural gas combustion emissions from Laminator 3's oven.

## TIMING

September 18, 2017 - Permit application received at DAQ.

September 19, 2017 - $1,000.00 application fee received at DAQ.

September 22, 2017 - Tri-Seal's legal advertisement runs in the *Wheeling New Register*.

October 19, 2017 - E-mailed copy of Newspaper Affidavit of Publication.

October 24, 2017 - Incomplete email sent to John Brak.

October 24, 2017 - John Brak forwards incomplete email to an environmental consultant for assistance.

October 30, 2017 - Larry Bernson sends copy of omitted (from application) Excel workbook.

October 30, 2017 - The writer emails Larry Bernson that there is a quality issue with the application that goes beyond the calculation section of the application.

October 30, 2017 - The writer emails John Brak a copy of a previous permit application sent by Tri Seal to the DAQ on January 12, 2012. The email uses the 2012 application as an example of what to do right. It compares the 2012 application to the deficient application received in September 18, 2017.

October 31, 2017 - The writer emails John Brak stating that a complete application needs to be submitted in writing, that the writer does not have the time to work back and forth with Larry Bernson over the phone to come up with a complete application. The DAQ recommends that Tri Seal work with Gene Coccari of DAQ's small business group to come up with a complete application.

October 31, 2017 - Email from Larry Bernson still trying to explain the Excel workbook and not addressing the deficiencies in the permit application.

October 31, 2017 - Email from Beverly McKeone to Larry Bernson clarifying that the requested information be submitted in writing, that it is not sufficient to "explain" what the spreadsheet means.

October 31, 2017 - Clark Baubles thanks Bev for the clarification and agrees to provide the addition information and formatting changes that were requested.

November 16, 2017 - Clark Bauble emails the writer with amended or additional information that was requested.

November 16, 2017 - The writer emails Clark Bauble that the DAQ must be sent a hard copy of the amended permit application approved/signed by Tekni-Plex's Responsible Official.

November 24, 2017 - Email from Larry Bernson to Gene Coccari thanking Gene for reviewing revisions and commending on Tri Seals permit application.

November 29, 2017 - Email from Gene Coccari to Larry Bernson with comments on Tri Seals revised application.

November 30, 2017 - Email from the writer to Gene Coccari thanking Gene for reviewing Tri Seal's application and for pointing out areas that need clarification/revision. Also voices concern that the calculation revisions could result in Tri-Seal needing to re-run their legal ad due to originally under-estimating emissions.

December 1, 2017 - Email from Larry Bernson to Gene Coccari thanking Gene for the time and effort provided in reviewing the application. Also, concerns are shared with Gene about his understanding of how Tri Seal documented VOC emissions.

December 5, 2017 - Letter from the writer thanking Gene Coccari for working with Tri Seal.

January 4, 2018 - Email from the writer to Gene Coccari stating that Tekni-Plex (Tri-Seal Products) had not sent in the revised application.

January 12, 2018 - Email from the writer to Clark Baubles asking that a hard copy of the corrected application be submitted.

February 9, 2018 - Hard copy of the revised Tekni-Plex application received at the DAQ.

April 4, 2018 - Draft permit sent via email to Tekni-Plex's John Brak for comment.

## DESCRIPTION OF PROCESS

Tri-Seal operates a flexible packaging converting facility whereby purchased raw materials (papers, plastic films and aluminum foils) are combined into a variety of laminated constructions for use by customers in packaging applications. In addition, some products are produced by applying molten paraffin wax to papers and lamination, in line with laminating operations.

Tri-Seal also operates several auxiliary processes including slitting, rewinding, wrapping, packaging and palletizing.

Maintenance items are also utilized, such as lubricating oils and greases, shop towels, repair and replacement items, etc. General office supplies are also brought onto the site.

L1 Laminator/ Waxer: Laminator #1 is used to apply adhesives and waxes in laminating pulp board to a variety of facing materials, including paper, plastic films and aluminum foils. Water-based adhesives are exclusively employed. Only hot water is needed for cleaning the laminator.

In: First Web - Paper;
Second Web - Paper (Pulp); and Adhesive.

Out: Laminated (& waxed) roll stock.

Emissions occur from the evaporation of volatile organic compounds (VOCs) contained within the adhesives/waxes. No emissions are associated with cleaning operations.

Emissions are exhausted into Stack L1E.

Exhaust Point - L1E; Coating Application: VOC

L3 Printer/ Laminator: Laminator #3 is used to apply ink and/or adhesives to a variety of substrates. A natural gas fired oven is employed for several products produced within this laminator. In addition, various cleaning materials are employed.

In: First Web - Paper, Aluminum Foil; Polyethylene; Polyester; Other raw materials.
Second Web - Paper; Aluminum Foil; Polyethylene; Polyester; Other raw materials.

Natural Gas. Ink and Adhesive.

Out: Printed or Laminated roll stock; Paper/Al Foil; Paper/Polyethylene; Paper/Polyester Etc.

Emissions occur from the volatilization of volatile organic compounds (VOCs) and trace concentrations of hazardous air pollutants (HAPs) contained within the adhesives, inks and

cleaning materials; along with combustion products associated with the utilization of the natural gas-fired oven.

Emissions are exhausted into Stack L3E.

L4 Hot-Melt Coater: Laminator #4 is utilized to apply hotmelt adhesives and waxes to a variety of substrates. No cleaning operations are conducted.

In: First Web - Paper, Aluminum Foil; Polyethylene; Polyester; Other raw materials.
Second Web - Paper; Aluminum Foil; Polyethylene; Polyester; Other raw materials.

Hotmelt Adhesive.

Out: Laminated roll stock; Paper/Al Foil; Paper/Polyester; Polyethylene/Foil Etc.

No emissions are associated with the coating operation as all coatings exhibit 0% VOC.

No dedicated stack for this equipment is employed.

L5 Solventless Laminator: Laminator #5 is used to apply solvent-less adhesives to a variety of substrates, as well as laminate secondary substrates. Various materials are employed to clean this laminator.

In: First Web - Paper, Aluminum Foil; Polyethylene; Polyester; Other raw materials.
Second Web: - Paper; Aluminum Foil; Polyethylene; Polyester; Other raw materials.

Solventless Adhesive.

Out: Laminated roll stock; Paper/Al Foil; Paper/Polyester; Polyethylene/Foil Etc.

Negligable emissions are associated with the lamination operation, as all adhesives exhibit 0% VOC and trace concentrations of hazardous air pollutants (HAPs). However, emissions occur from the evaporation of VOCs and HAPs contained within the cleaning materials.

Emissions are exhausted into the general building area.

No dedicated stack for this equipment is employed.

P1 Printer: Printer #1 will be used to apply ink to a variety of substrates.

In: First Web - Aluminum Foil; Polyethylene; Polyester; Other raw materials.

Second Web - Paper; Aluminum Foil; Polyethylene; Polyester; Other raw materials.

Ink.

Out: Printed roll stock; Paper/Al Foil; Paper/Polyethylene; Paper/Polyester Etc.

Emissions occur from the evaporation of volatile organic compounds (VOCs) contained within the printing inks and cleaning materials.

Emissions are exhausted into Stack P1E.

| **Table 2: Emissions Unit Data Sheet General for New Printer (P1S; P1E) (Attachment L in Permit Application).** | |
|---|---|
| Name or type and model of proposed affected source. | RG Engineering Tech-Seal 53013 Printer |
| Name(s) and maximum amount of proposed process material(s) charged per hour. | Ink: 184.2 lb/hr<br>Cleaning: 1.4 lb/hr |
| Name(s) and maximum amount of proposed material produced per hour: | Printed Rollstock - 1,800 ft/min |
| Projected amount of pollutants that would be emitted from this affected source if no control device were used; | VOCs 6.05 lb/hr |
| Monitoring | None Proposed |
| Recordkeeping | Mass of ink, additives and cleaning material employed based on purchase records. |
| Reporting | Annual |
| Testing | VOC and HAP content based on supplier Data Sheets. |

After the finished product has been manufactured in large rolls, they are slit to narrower and/or shorter rolls, wrapped, palletized and shrink wrapped.

This application is designed to permit a newly installed printer, increase certain permit limits to allow for increased machine efficiency and line speeds, and account for equipment cleaning activities that were not documented within the existing permit.

Changes to the Table 3 are shown is red.

**Table 3: Emission Points Data Sheet.**

| Emission Unit ID | Emission Point ID | Emission Unit Description | Year Installed/ Modified | Design Capacity | Type and Date of Change | Control Device |
|---|---|---|---|---|---|---|
| L1S | L1E (Stack) | Laminator L1 / #1 (Water-based Adhesives; Waxes; Hot Water Cleaning) | 1999 | -- | -- | None |
| L3S | L3E (Stack) | Laminator L3 / #3 ~~(solventless)~~ (Ink and/or Adhesives; Uses Cleaning Products; NG-fired Oven) | 2003 | -- | -- | None |
| L4S | ~~L4E~~ NA (No Stack) | Laminator L4 / #4 ~~(Hotmelt Coater)~~ (Hot-Melt Adhesive and Waxes; 0% VOC coating; no Cleaning Operations) | 2007 | -- | -- | None |
| L5S | ~~None~~ NA (No Stack) | Laminator L5 / #5 (Solvent-less Adhesives, at 100% solids and 0% VOC; Uses Cleaning Products) | 2010 | -- | -- | None |
| ~~E1S~~ | ~~E1C~~ | ~~Polyethylene Extruder~~ | ~~1999~~ | | | ~~None~~ |
| P1S | P1E (Stack) | Printer #1 (Ink and Cleaning Products) | 2016 | | New | None |

Table 4: Hourly and Annual Amounts of Coating and Cleaning Material Used.

| Equipment | Coating Material | | Cleaning Material | |
|---|---|---|---|---|
| | (lb/hr) | (ton/yr) | (lb/hr) | (ton/yr) |
| Laminator 1 | 975.9 | 38.36 | Hot Water | Hot Water |
| Laminator 3 | 370.8 | 125.97 | 10.0 | 24.49 |
| Laminator 4 | 681.3 | 94.40 | No Cleaning | No Cleaning |
| Laminator 5 | 370.8 | 90.18 | 10.0 | 24.23 |
| Printer 1 | 184.2 | 4.99 | 1.4 | 0.27 |

## SITE INSPECTION

The writer did not visit the site for this modification permit. Al Carducci, Enforcement Inspector out of DAQ's Northern Panhandle Regional Office in Wheeling is Tri-Seal's inspector. Al conducted a full on-site inspection on April 18, 2017 and found the new printer had been installed without a permit. The facility was found not to be in compliance because of the printer installation and was given the compliance code of 10.

Directions: Traveling west on I-70 West: Take Exit 11 (Dallas Pile). Turn right on to Dallas Pike Road. At approximately 50 yards, turn left onto Technology Drive. Approximately 1/4 mile, the facility is on the left.

MSDS's

Tri-Seal submitted (in Attachment H to the permit application) 26 MSDS's under 4 different groupings (6 - Adhesives; 5 - Coatings; 13 - Inks; and 2 - Waxes). These MSDS are listed by name only below. For additional information, please refer to the permit application.

| Adhesives | Coatings |
|---|---|
| - Flextra PWF-1532<br>- Loctite Liofol LA 1150-52<br>- LOCTITE LIOFOL LA 1142-13<br>- TYCEL 7283 BULK<br>- Aquence LA 1551 ULT Control<br>- LOCITE LIOFOL LA 6029 | - Cross Linable Vinyl Lacquer - 8018/8091<br>- Novacote SF-693<br>- Vannapas 426<br>- 8231<br>- PHF-0975-NB3 |
| Inks<br>- LABELSTAR DENSE BALCK (Doc #2)<br>- LABELSTAR PMS 288C BLUE (Doc #3)<br>- LABELSTAR REFLEX BLUE (Doc #4)<br>- FG20803 VERSATECH 100 TS9903 342C GREEN (Doc #5)<br>- FLEXO PMS 187U RED (Doc #6)<br>- AQUA –GW Cool Gray 3C (Doc #7)<br>- LABELSTAR PMS 361C Green (Doc #8)<br>- SPECIAL 80% 348C GREEN (Doc #9)<br>- LABELSTAR PMS 288C BLUE (Doc #10)<br>- TKS BW8 OPAQUE WHITE 11# (Doc #11)<br>- TKS BW4 TECH SEAL 032 RED 9# (Doc #14)<br>- TKS BW8 SWOP PROCESS Black 9# (Doc #15)<br>- LABELSTAR SPECIAL COOL GRAY (Doc #16) | WAXES<br>- 8000 SERIES PRODUCTS (Doc #70)<br>- 4700 SERIES PRODUCTS (Doc #71) |

## ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

The writer reviewed the emissions calculations submitted by Tri-Seal (see Attachment 3 to this evaluation) and believes the estimates in Table 5 to be logical and accurate. Tri-Seal

**Table 5: Annual (lb/yr) Emission Rates from Tri-Seal's Flexible Packaging Converting Plant, Triadelphi, Ohio County, WV.**

| Air Pollutant | Laminator L1 (Coating) | Laminator L3 (Coating, Oven, (Cleaning) | Laminator L4 (Coating) | Laminator L5 (Coating, Cleaning) | Printer 1 (Coating, Cleaning) | Total (ton/yr) |
|---|---|---|---|---|---|---|
| VOC | 0.00079 | 10.00 (4) | 0.00 | 1.05 | 0.37 (6) | 11.43 |
| NOx | --- | 0.36 (5) | --- | --- | --- | 0.36 |
| CO | --- | 0.30 (5) | --- | --- | --- | 0.30 |
| PM | --- | 0.027 (5) | --- | --- | --- | 0.027 |
| SO2 | --- | 0.0021 (5) | --- | --- | --- | 0.0021 |
| Pb | --- | $1.79 \times 10^{-6}$ (5) | --- | --- | --- | $1.79 \times 10^{-6}$ |
| CAS# 111-46-6 (1) | --- | $6.09 \times 10^{-8}$ (Coating) | --- | $5.07 \times 10^{-8}$ (Coating) | --- | $1.12 \times 10^{-7}$ |
| CAS# 101-68-8 (2) | --- | $5.3 \times 10^{-9}$ (Coating) | --- | $8.66 \times 10^{-9}$ (Coating) | --- | $1.40 \times 10^{-8}$ |
| CAS#112-34-5 (3) | --- | 1.05 (Cleaning) | --- | 1.05 (Cleaning) | --- | 2.10 |

(1) Glycol ether
(2) Methylene diphenyl diisocyanate (MDI)
(3) Glycol ether
(4) VOC = 8.79 (coating) + 0.020 (oven) + 1.20 (cleaning) = 10.01 ton/yr
(5) Oven emissions.
(6) VOC = 0.23 (coating) + 0.15 (Cleaning) = 0.38 ton/yr

| Table 6: Hourly (lb/hr) Emission Rates from Tri-Seal's Flexible Packaging Converting Plant, Triadelphi, Ohio County, WV. | | | | | | |
|---|---|---|---|---|---|---|
| **Air Pollutant** | **Laminator L1 (Coating)** | **Laminator L3 (Coating, Oven, Cleaning)** | **Laminator L4 (Coating)** | **Laminator L5 (Coating, Cleaning)** | **Printer 1 (Coating, Cleaning)** | **Total (lb/hr)** |
| VOC | 1.58 | 171.42 (4) | 0.00 | 5.00 (Cleaning) | 7.09 (6) | 185.09 |
| NOx | --- | 0.082 (5) | --- | --- | --- | 0.082 |
| CO | --- | 0.069 (5) | --- | --- | --- | 0.069 |
| PM | --- | 0.0062 (5) | --- | --- | --- | 0.0062 |
| SO2 | --- | 0.00049 (5) | --- | --- | --- | 0.00049 |
| Pb | --- | $4.08 \times 10^{-7}$ (5) | --- | --- | --- | $4.08 \times 10^{-7}$ |
| CAS# 111-46-6 (1) | --- | $2.21 \times 10^{-7}$ (Coating) | --- | $2.21 \times 10^{-7}$ (Coating) | --- | $4.42 \times 10^{-7}$ |
| CAS# 101-68-8 (2) | --- | $4.02 \times 10^{-8}$ (Coating) | --- | $2.83 \times 10^{-8}$ (Coating) | --- | $6.85 \times 10^{-8}$ |
| CAS#112-34-5 (3) | --- | 5.00 (Cleaning) | --- | 5.00 (Cleaning) | --- | 10.00 |

(1) Glycol ether
(2) Methylene diphenyl diisocyanate (MDI)
(3) Glycol ether
(4) VOC = 166.41 (coating) + 0.0045 (oven) + 5.00 (cleaning) = 171.42 lb/hr
(5) Oven emissions.
(6) VOC = 6.05 (coating) + 1.04 (Cleaning) = 7.09 lb/hr

## REGULATORY APPLICABILITY

45CSR13 Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits, and Procedures for Evaluation

Tri-Seal's modification application was first received at the DAQ on September 18, 2017. The $1,000.00 application fee was paid the following day. On September 22, 2017, Tri-Seals legal advertisement ran in *The Wheeling Register*. The application was determined to be incomplete by the writer on

October 24, 2017, was revised with input from DAQ's Small Business Group's Gene Coccari, and was re-submitted on February 9, 2017. The revised permit application upon later review was deemed complete on the day it was first received (2/9/18).

A draft permit was sent to Tri-Seal for comment on April 4, 2018. Any comments from Tri-Seal (where possible) will be incorporated into the draft permit. The draft permit will be given to Beverly McKeone on April 11, 2018 for review/comment. Upon approval of the draft permit, the DAQ's legal advertisement will run in *The Wheeling Register* sometime the week of April 15, 2018. At the end of DAQ's 30-day public comment period, if no comments are received, the draft permit will be approved by the Air Director. The anticipated approval/issuance date for the permit is estimated to be May 20, 2018.

45CSR22 Air Quality Management Fee Program

This modification permit does not affect the facility's status under Rule 22 or trigger any other applicable state rules or federal regulations.

## TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Approximately 2.1 tons per year of DEG monobuyl ether [2-(2-Butoxyethoxyl) ethanol] are estimated to be emitted from the equipment cleaning of Laminators 3 and 5.

2-(2-Butoxyethoxyl) ethanol is a glycol ether solvent which is a clear liquid having a very low odor and high boiling point. It serves as a solvent for paints and varnishes, in the chemical industry, household detergents, brewing chemicals and textile processing. Also, this substance is used as a raw material in the chemical synthesis.

## AIR QUALITY IMPACT ANALYSIS

There was no air quality impact analysis study done for this modification permit because emissions from this source are considered to be small, i.e., the source is a minor source of pollution.

## MONITORING OF OPERATIONS

The same monitoring requires that applied last time still apply to the permitted equipment which now includes the newly added Printer 1.

### 4.2. Monitoring Requirements

4.2.1. For the purposes of demonstrating compliance with the emission and material usage limits in section 4.1. of this permit, the permittee shall maintain daily, monthly, and yearly records of

the amount of wax emulsions, hotmelts, adhesives, coatings, and inks used by each equipment piece, the VOC and/or HAP content of the coatings used by each equipment piece, and the hours of operation for each equipment piece. Also, the permittee shall maintain monthly records of the amount of natural gas consumed at the facility. Compliance with the hourly hotmelts, adhesives, coatings, and inks usage rates shall be determined by average hourly usage rates determined on a daily basis. Compliance with the annual usage rate limits shall be determined using 12-month rolling totals. A 12-month rolling total shall mean the sum of hotmelts, adhesives, coatings, and inks used by an equipment piece at any given time for the previous twelve (12) calendar months. Said records shall be maintained in accordance with 3.4.1.

## CHANGES TO PERMIT R13-2562C

The changes made to permit R13-2562C to arrive at permit R13-2562D are shown in a compare file which is given in Attachment A to this evaluation.

## RECOMMENDATION TO DIRECTOR

The writer reviewed permit application R13-2562D and believes that compliance with all applicable regulations can be achieved. Therefore, the writer recommends that Permit R13-2562D be granted to Tri-Seal for the modification of a flexible packaging converting facility at Triadelphia, Ohio County, WV.

John Legg
Permit Writer

April 19, 2018

Attachment A

Modification Permit R13-2562D

Compare File Showing

Changes Made to R13-2562C to Arrived at R13-2562D

Tekniplex, Inc. aba Tri-Seal

Triadelphia, Ohio County, WV